CATERPILLAR

Operation and Maintenance Manual

430D Backhoe Loader

S/N BML02281-04799

Tip; Use Bookmarks panel to navigate

Printed by Heavy Equipment Manuals
v2.20

Printed in U.S.A

Heavy Equipment Manuals

SEBU7399-09 420D and 430D Backhoe Loaders ____ 2
SEBU7821-06 416D, 420D, 424D, 428D, 430D, 432D and 442D Backhoe Loaders ____ 519
SEBU8787-02 Snow Push Work Tool Supplement ____ 989

Foreword 2
Maintenance Section 6
Operation Section 184
Product Information Section 422
Reference Information Section 459
Safety Section 462

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders

Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

s03548206

Foreword

California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

WARNING - This product can expose you to chemicals including ethylene glycol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to:

www.P65Warnings.ca.gov

Do not ingest this chemical. Wash hands after handling to avoid incidental ingestion.

WARNING - This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information go to:

www.P65Warnings.ca.gov

Wash hands after handling components that may contain lead.

Literature Information

This manual should be stored in the operator's compartment in the literature holder or seat back literature storage area.

This manual contains safety information, operation instructions, transportation information, lubrication information, and maintenance information.

Some photographs or illustrations in this publication show details or attachments that can be different from your machine. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your machine which are not included in this publication. Read, study, and keep this manual with the machine.

Whenever a question arises regarding your machine, or this publication, please consult your Cat dealer for the latest available information.

Safety

The safety section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the machine.

Read and understand the basic precautions listed in the safety section before operating or performing lubrication, maintenance, and repair on this machine.

Operation

The operation section is a reference for the new operator and a refresher for the experienced operator. This section includes a discussion of gauges, switches, machine controls, attachment controls, transportation, and towing information.

Photographs and illustrations guide the operator through correct procedures of checking, starting, operating, and stopping the machine.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the machine and its capabilities.

Maintenance

The maintenance section is a guide to equipment care. The Maintenance Interval Schedule (MIS) lists the items to be maintained at a specific service interval. Items without specific intervals are listed under the "When Required" service interval. The Maintenance Interval Schedule lists the page number for the step-by-step instructions required to accomplish the scheduled maintenance. Use the Maintenance Interval Schedule as an index or "one safe source" for all maintenance procedures.

Maintenance Intervals

Use the service hour meter to determine servicing intervals. Calendar intervals shown (daily, weekly, monthly, etc.) can be used instead of service hour meter intervals if the calendar intervals provide more convenient servicing schedules and approximate the indicated service hour meter reading. Perform the recommended service at the interval that occurs first.

Under severe, dusty, or wet operating conditions, more frequent lubrication than is specified in the maintenance intervals chart might be necessary.

Perform service on items at multiples of the original requirement. For example, at every 500 service hours or 3 months, also service those items listed under every 250 service hours or monthly and every 10 service hours or daily.

Certified Engine Maintenance

Proper maintenance and repair are essential to keep the engine and machine systems operating correctly. As the heavy-duty off-road diesel engine owner, you are responsible for the performance of the required maintenance listed in the Owner Manual, Operation and Maintenance Manual, and Service Manual.

It is prohibited for any person engaged in the business of repairing, servicing, selling, leasing, or trading engines or machines to remove, alter, or to render inoperative, any emission-related device or element of design installed on or in an engine or machine that is in compliance with all applicable regulations of the intended country to which it has been shipped. Certain elements of the machine and engine such as the exhaust system, fuel system, electrical system, intake air system, and cooling system may be emission-related and should not be altered unless approved by Caterpillar.

Machine Capacity

Additional attachments or modifications may exceed machine design capacity which can adversely affect performance characteristics. Included would be stability and system certifications such as brakes, steering, and rollover protective structures (ROPS). Contact your Cat dealer for further information.

Product Identification Number

Effective First Quarter 2001 the Product Identification Number (PIN) has changed from 8 to 17 characters. To provide uniform equipment identification, construction equipment manufacturers are moving to comply with the latest version of the product identification numbering standard. Non-road machine PINs are defined by ISO 10261. The new PIN format will apply to all machines and generator sets. The PIN plates and frame marking will display the 17 character PIN. The new format will look like the following:

This is the sample of the manual

Click on the download link for complete manual

Download Link

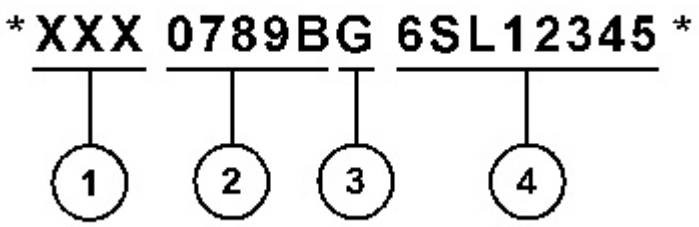

Illustration 1 g03891925

Where:

1. World Manufacturing Code (characters 1-3)

2. Machine Descriptor (characters 4-8)

3. Check Character (character 9)

4. Machine Indicator Section (MIS) or Product Sequence Number (characters 10-17). These were previously referred to as the Serial Number.

Machines and generator sets produced before First Quarter 2001 will maintain their 8 character PIN format.

Components such as engines, transmissions, axles, and work tools will continue to use an 8 character Serial Number (S/N).

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Oct 17 22:28:49 UTC+0530 2023

Axle Breathers - CleanReplace 4
Axle Universal Joint (Front) - Lubricate 6
Backhoe Boom, Stick, Bucket, and Cylinder Bearings - Lubricate 8
Backup Alarm - Test 11
Battery or Battery Cable - InspectReplace 12
Belts - InspectAdjustReplace 13
Brake Reservoir Oil Level - Check 17
Braking System - Test 19
Bucket Cutting Edges - InspectReplace 22
Bucket Tips - InspectReplace 24
Cab Air Filter - CleanReplace 31
Cab Interior - Clean 34
Capacities (Refill) (2) 35
Capacities (Refill) 37
Cooling System Coolant (ELC) - Change 39
Cooling System Coolant Extender (ELC) - Add 45
Cooling System Coolant Level - Check 47
Cooling System Water Temperature Regulator - CleanReplace 49
Differential Oil (Front) - Change 52
Differential Oil (Rear) - Change (2) 55
Differential Oil (Rear) - Change 58
Differential Oil Level (Front) - Check 60
Differential Oil Level (Rear) - Check 62
Drive Shaft Spline - Lubricate 63
Engine Air Filter Primary Element - Replace 65
Engine Air Filter Secondary Element - Replace 67
Engine Air Filter Service Indicator - Inspect 71
Engine Compartment - Clean 73
Engine Oil and Filter - Change 74
Engine Oil Level - Check 77

Engine Valve Lash - Check 79
Extendable Stick Pads - InspectReplace - If Equipped 80
Final Drive Oil (Front) - Change 83
Final Drive Oil Level (Front) - Check 86
Fuel System - Prime 88
Fuel System Filter and Water Separator - Replace 92
Fuel System Water Separator - Drain 95
Fuel Tank Water and Sediment - Drain 97
Fuses - Replace 100
Hydraulic System Oil - Change 106
Hydraulic System Oil Filter - Replace 109
Hydraulic System Oil Level - Check 112
Kingpin Bearings (Front) - Lubricate - Two-Wheel Drive Only 113
Loader Bucket, Cylinder, and Linkage Bearings - Lubricate 115
Lubricant Viscosities (2) 118
Lubricant Viscosities 121
Maintenance Interval Schedule 124
Parking Brake - CheckAdjust 127
Radiator Core - Clean 130
Refrigerant Dryer - Replace 132
Rollover Protective Structure (ROPS) - Inspect 133
S·O·S Information 135
Seat Belt - Inspect 142
Seat Belt - Replace 144
Stabilizer and Cylinder Bearings - Lubricate 146
Swing Frame and Cylinder Bearings - Lubricate 147
Tire Inflation - Check 149
Tire Inflation Pressure Adjustment 150
Tire Inflation with Air 151
Tire Installation 153

Tire Shipping Pressure 154
Transmission Magnetic Screen - Clean 156
Transmission Oil - Change 158
Transmission Oil Filter - Replace 162
Transmission Oil Level - Check 164
Welding on Machines and Engines with Electronic Controls 166
Wheel Bearings (Front) - Lubricate - Two-Wheel Drive 168
Wheel Nut Torque - Check 172
Window Washer Reservoir - Fill 174
Window Wipers - InspectReplace 176
Windows - Clean 177

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders
Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01588280

Axle Breathers - Clean/Replace

SMCS - 3278-510-BRE; 3278-070-BRE

S/N - BLN7966-10299

S/N - BML3503-4799

S/N - BNK4367-5899

S/N - FDP14496-18399

Illustration 1 g00833319

The front axle breather is located on the top right side of the differential housing.

Illustration 2 g00833321

The rear axle breather is located on the top left side of the differential housing.

1. Clean the area around the breathers. Remove the breathers from the front and rear axles.

   Note: Do not turn the adapter when you remove the breather.

2. Wash the breathers in clean nonflammable solvent. Wipe the breathers dry and check the breathers for damage.

3. Install the clean breathers back into the axles. Replace the breathers if the breathers are damaged.

   Note: If the adapter is turned make sure that the slot in the adapter is parallel to the axle housing.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Oct 17 22:42:16 UTC+0530 2023

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders

Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01375369

Axle Universal Joint (Front) - Lubricate

SMCS - 3251

S/N - BKC1-919

S/N - BLN1-7965

S/N - BMC1-1059

S/N - BML1-3502

S/N - BNK1-4366

S/N - FDP1-14495

Illustration 1 g00726186

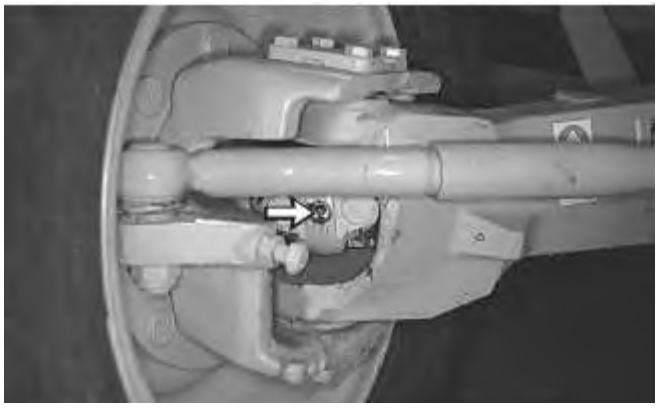

Illustration 2 g00290596

Apply lubricant to the grease fittings for the drive shaft to the final drives. There are two grease fittings for each drive shaft.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders
Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01877901

Backhoe Boom, Stick, Bucket, and Cylinder Bearings - Lubricate

SMCS - 6501; 6502; 6503; 6510; 6511; 6512; 6513; 6533

Illustration 1 g00723263

Position the backhoe into the service position that is shown above.

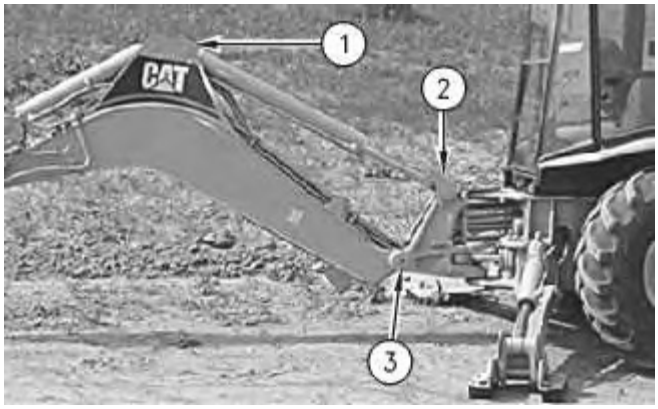

Illustration 2 g00287247

Apply lubricant to the grease fitting (1) for the head end of the boom cylinder. Apply lubricant to the grease fitting (2) for the rod end of the boom cylinder.

Apply lubricant to the grease fitting (3) for the boom pivot. There is one grease fitting on each side of the machine.

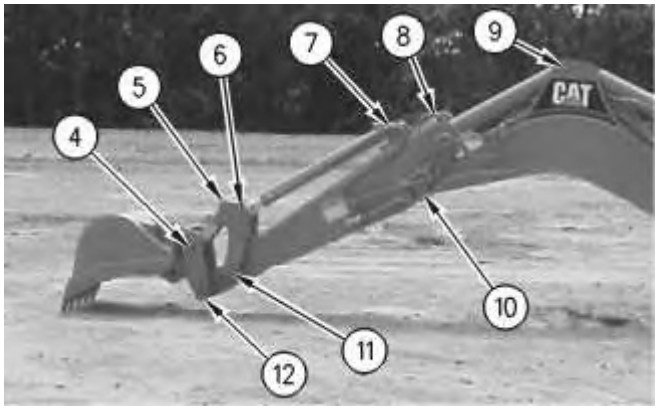

Illustration 3 g00723265

Apply lubricant to the grease fitting (9) for the head end of the stick cylinder. Apply lubricant to the grease fitting (8) for the rod end of the stick cylinder.

Apply lubricant to the grease fitting (10) for the pivot pin for the stick.

Apply lubricant to the grease fitting (7) for the head end of the bucket cylinder. Apply lubricant to the grease fitting (6) for the rod end of the bucket cylinder.

Apply lubricant to the grease fitting (11) for the pivot pin. There is one grease fitting on each side of the machine.

Apply lubricant to the grease fitting (4) for the bucket pivot pin.

Apply lubricant to the grease fitting (5) for the link.

Apply lubricant to the grease fitting (12) for the pivot pin.

There is a total of thirteen grease fittings.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders

Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i00080741

Backup Alarm - Test

SMCS - 7406

Turn the engine start switch key to ON in order to perform the test.

Apply the service brake. Move the transmission direction control lever to REVERSE position.

The backup alarm should immediately sound. The backup alarm will continue to sound until the transmission direction control lever is moved to the NEUTRAL position or to the FORWARD position.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Oct 17 22:42:57 UTC+0530 2023

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders

Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01833495

Battery or Battery Cable - Inspect/Replace

SMCS - 1401

1. Turn the engine start switch to the OFF position. Turn all switches to the OFF position.
2. Disconnect the negative battery cable from the frame.

   Note: Do not allow the disconnected battery cable to contact the frame of the machine.
3. Disconnect the negative battery cable at the battery.
4. Inspect the battery terminals and inspect the battery cables. Keep the terminals clean and keep the terminals coated with petroleum jelly.
5. Perform the necessary repairs. Replace the cable or the battery, as needed.
6. Connect the negative battery cable at the battery.
7. Connect the battery cable to the frame of the machine.
8. Install the engine start switch key.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders

Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01878173

Belts - Inspect/Adjust/Replace

SMCS - 1357-040; 1357-510; 1357-025

If new belts are installed, check belt adjustment after 30 minutes of operation. For multiple belt drive applications, always replace the belts in matched sets. Replacing only one belt of a matched set will cause the new belt to carry more load because the older belts are stretched. The additional load on the new belt could cause the new belt to break.

1. Empty the bucket. Remove the pin that secures the brace for the loader lift arm to the left loader lift arm. Raise the loader arm to the maximum height.
2. Position the brace for the loader lift arm over the left lift cylinder rod with the flat end against the cylinder end.
3. Push the pin through the holes of the brace for the loader lift arm and install the cotter pin.
4. Slowly lower the loader arms until the brace for the loader lift arm contacts the top of the lift cylinder and the bosses on the loader arm.
5. Stop the engine in order to inspect the belts.

Illustration 1 g00731568

6. Remove the engine access panel on the left side of the machine.

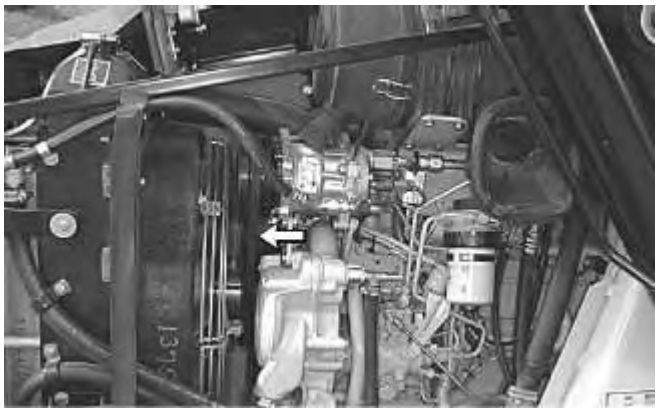

Illustration 2 g00287234

7. Inspect the condition of the air conditioner belt and the adjustment of the air conditioner belt. The air conditioner belt should deflect 10 mm (0.38 inch) under 110 N (25 lb) of force.

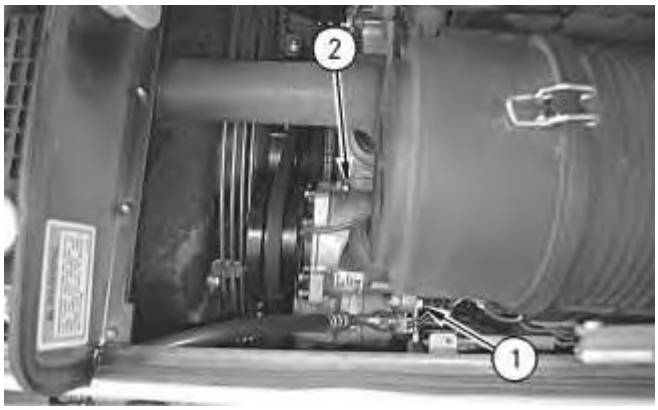

Illustration 3 g00287235

8. Loosen the adjusting locknut (1). Loosen the compressor bracket mounting bolt (2).
9. Move the compressor until the correct belt tension is reached.
10. Tighten the adjusting locknut (1). Tighten the compressor bracket mounting bolt (2).
11. Recheck the belt deflection. If the amount of deflection is incorrect, repeat Step 8 to Step 10.
12. Install the engine access panel.

Illustration 4 g00731569

13. Remove the engine access panel on the right side of the machine.

Illustration 5 g00287242

14. Inspect the condition of the alternator belts and the adjustment of the alternator belts. The alternator belts should deflect 10 mm (0.38 inch) under 110 N (25 lb) of force.

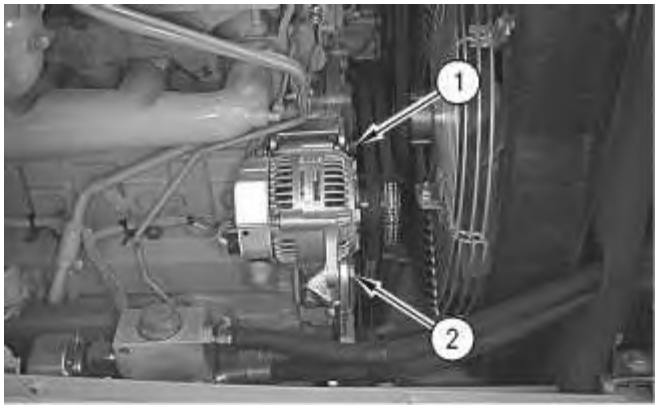

Illustration 6 g00287243

15. Loosen the mounting bolt (1). Loosen the adjusting locknut (2).
16. Move the alternator until the correct tension is reached.
17. Tighten the adjusting locknut (2). Tighten the mounting bolt (1).
18. Recheck the belt deflection. If the amount of deflection is incorrect, repeat Step 15 to Step 17.
19. Install the engine access panel.
20. Start the engine. Raise the loader arms to the maximum height.
21. Remove the pin and replace the brace for the loader lift arm to the stored position on the loader lift arm.
22. Lower the bucket to the ground.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Oct 17 22:43:30 UTC+0530 2023

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders
Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01354984

Brake Reservoir Oil Level - Check

SMCS - 4291-535

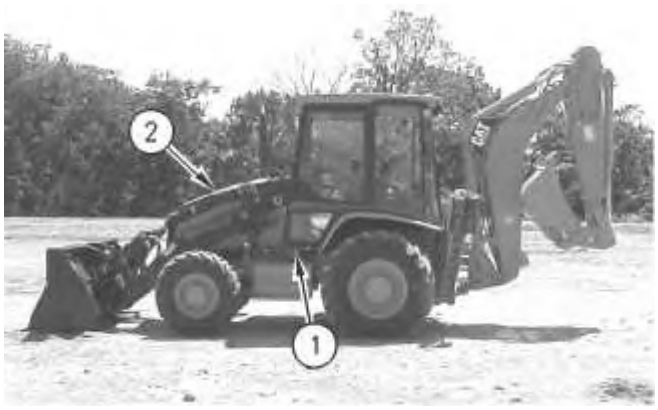

Illustration 1 g00723507

Pull the hood release lever (1) in order to open the engine access door (2) on the top of the machine. The hood release lever is located under the cab door on the left side of the machine.

Illustration 2 g00723554

Maintain the oil level between the "MIN" mark and "MAX" mark on the brake reservoir. Add oil, if necessary.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders
Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i02291147

Braking System - Test

SMCS - 4251; 4267; 7000

Service Brake Holding Ability Test

Check the area around the machine. Make sure that the machine is clear of personnel and clear of obstacles.

Test the brakes on a dry, level surface.

Fasten the seat belt before you test the brakes.

The following tests are used to determine if the service brake is functional. These tests are not intended to measure the maximum brake holding effort. The brake holding effort that is required to sustain a machine at a specific engine rpm varies depending on the machine. The variations are the differences in the engine setting, in the power train efficiency, and in the brake holding ability, etc.

1. Start the engine. Raise the bucket slightly.

2. Apply the service brake. Release the parking brake.

3. If the machine is equipped with the standard transmission, move the transmission speed shift lever to THIRD gear. Move the transmission direction control lever to FORWARD, to NEUTRAL, and back to FORWARD. If the machine is equipped with a power shift transmission move the transmission control lever to FOURTH SPEED FORWARD, to NEUTRAL, and back to FOURTH SPEED FORWARD. This is done in order to override the transmission neutralizer for this test.

   Note: Place machines that are equipped with all wheel drive into two-wheel drive mode.

4. Gradually increase the engine speed to high idle. The machine should not move.

WARNING

If the machine begins to move, reduce the engine speed immediately and engage the parking brake.

5. Reduce the engine speed to low idle. Move the transmission to NEUTRAL. Engage the parking brake. Lower the bucket to the ground. Stop the engine.

NOTICE

If the machine moved while testing the brakes, contact your Caterpillar dealer. Have the dealer inspect and, if necessary, repair the service brake before returning the machine to operation.

Secondary Brake Holding Ability Test

Check the area around the machine. Make sure that the machine is clear of personnel and clear of obstacles.

Test the brakes on a dry, level surface.

Fasten the seat belt before you test the brakes.

The following tests are used to determine if the parking brake is functional. These tests are not intended to measure the maximum brake holding effort. The brake holding effort that is required to sustain a machine at a specific engine rpm varies depending on the machine. The variations are the differences in the engine setting, in the power train efficiency, and in the brake holding ability, etc.

1. Start the engine. Raise the bucket slightly.

2. Engage the parking brake.

3. If the machine is equipped with the standard transmission, move the transmission speed shift lever to THIRD gear. Move the transmission direction control lever to FORWARD, to NEUTRAL, and back to FORWARD. If the machine is equipped with a power shift transmission move the transmission control lever to FOURTH SPEED FORWARD, to NEUTRAL, and back to FOURTH SPEED FORWARD. This is done in order to override the transmission neutralizer for this test.

   Note: Place machines that are equipped with all wheel drive into two-wheel drive mode.

Note: The parking brake indicator light should come on and the parking brake alarm should sound.

4. Gradually increase the engine speed to high idle. The machine should not move.

WARNING

If the machine begins to move, reduce the engine speed immediately and apply the service brake pedal.

5. Reduce the engine speed. Move the transmission to NEUTRAL. Lower the bucket to the ground. Stop the engine.

NOTICE

If the machine moved while testing the brakes, contact your Caterpillar dealer.

Have the dealer inspect and, if necessary, repair the parking brakes before returning the machine to operation.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Oct 17 22:44:04 UTC+0530 2023

Product: BACKHOE LOADER
Model: 430D BACKHOE LOADER BML
Configuration: 430D Backhoe Loader BML02281-04799 (MACHINE) POWERED BY 3054 Engine

Operation and Maintenance Manual
420D and 430D Backhoe Loaders
Media Number -SEBU7399-09 **Publication Date -01/03/2015** **Date Updated -02/04/2019**

i01920076

Bucket Cutting Edges - Inspect/Replace

SMCS - 6801

WARNING

Personal injury or death can result from bucket falling.

Block the bucket before changing bucket cutting edges.

---

1. Raise the bucket. Place a block under the bucket.
2. Lower the bucket to the blocking.

   Do not block up the bucket too high. Block up the bucket so that the bucket is high enough to remove the cutting edges and the end bits.
3. Remove the bolts. Remove the cutting edge and the end bits.
4. Clean the contact surfaces.
5. Use the opposite side of the cutting edge, if this side is not worn.
6. Install a new cutting edge, if both edges are worn.
7. Install the bolts. Tighten the bolts to the specified torque.
8. Raise the bucket. Remove the blocks.
9. Lower the bucket to the ground.

10. After a few hours of operation, check the bolts for proper torque.

Copyright 1993 - 2023 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Oct 17 22:44:17 UTC+0530 2023

This is the sample of the manual

Click on the download link for complete manual

Download Link